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The Impact of the CEO's Personal Narcissism on Non-GAAP Earnings

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ABSTRACT: Non-GAAP earnings provide managers the flexibility to exclude GAAP items to either produce a more informative performance measure or provide them the ability to opportunistically exclude recurring expenses from non-GAAP earnings. Prior literature examines the use of this form of disclosure at the *firm* level, although it is ultimately *management's* decision. We extend prior non-GAAP literature by examining whether the use and quality of non-GAAP earnings is influenced by CEO personality traits, namely, CEO narcissism. We find that narcissistic CEOs are more likely to exclude expenses from non-GAAP earnings and that the magnitude of exclusions is greater. We also find that those non-GAAP exclusions are more persistent and, thus, lower-quality. Our results shed light on the disclosure practice of non-GAAP earnings and show how narcissistic CEOs are more likely to take advantage of the discretion in financial reporting disclosures in order to benefit the firm and themselves.

Keywords: non-GAAP earnings; earnings persistence; narcissism; executive personality traits.

Washington, D.C., January 16, 2002—In its first pro forma financial reporting case, the Securities and Exchange Commission instituted cease-and-desist proceedings against Trump Hotels & Casino Resorts Inc. for making misleading statements in the company's third-quarter 1999 earnings release. The Commission found that the release cited pro forma figures to tout the Company's purportedly positive results of operations but failed to disclose that those results were primarily attributable to an unusual one-time gain rather than to operations.

—U.S. Securities and Exchange Commission ([SEC 2002](#))

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I. INTRODUCTION

Non-GAAP earnings allow managers to redefine generally accepted accounting principles (GAAP) earnings by excluding expenses or revenues that are not expected to recur in the future. Prior research suggests that non-GAAP earnings provide a more informative earnings signal to investors (e.g., Bradshaw, Christensen, Gee, and Whipple 2018; Bhattacharya, Black, Christensen, and Larson 2003; Bradshaw and Sloan 2002). However, the discretion afforded to managers in defining non-GAAP earnings gives them the ability to opportunistically exclude expenses from non-GAAP earnings (e.g., Doyle, Jennings, and Soliman 2013; Black and Christensen 2009).¹ Although non-GAAP earnings are chosen by *management*, almost all of the existing literature focuses on *firm* characteristics and determinants. We add to the literature by directly examining whether CEO personality traits are associated with the likelihood that managers are opportunistically excluding expenses from non-GAAP earnings. We specifically examine whether narcissistic CEOs are more likely to exclude expenses from non-GAAP earnings and whether these exclusions are larger. We also examine whether the exclusions made by narcissistic CEOs are lower-quality. Our evidence suggests that narcissistic CEOs are more likely to opportunistically exclude expenses when defining non-GAAP earnings.

Prior research has shown that CEO narcissism affects a firm's strategic and accounting-related choices (e.g., Cragun, Olsen, and Wright 2020).² Narcissists are fueled by a desire for achievement, power, and status (Brunell et al. 2008). They have an incessant desire for self-enhancement, which impels them toward bold and aggressive behavior in order to manipulate situations in their favor (W. Campbell, Hoffman, S. Campbell, and Marchisio 2011). Upper echelons theory suggests that organizational choices reflect the personality characteristics of the firms' management (Hambrick 2007; Hambrick and Mason 1984). Prior research finds that narcissistic CEOs exploit accounting numbers, financial reporting features, and disclosures to improve the appearance of their firm to enhance their own self-image (Olsen and Stekelberg 2016; Olsen, Dworkis, and Young 2014).

Despite Regulation G, the observed practical use of non-GAAP earnings still allows flexibility and discretion in identifying which expenses and revenues are excluded from non-GAAP earnings.³ This flexibility and discretion can be used to produce an informative or opportunistic earnings figure. The non-GAAP earnings figure is more informative to investors if managers use their discretion to exclude non-recurring items from non-GAAP earnings. However, if managers use their discretion to exclude recurring items, then the non-GAAP earnings figure is suggestive of opportunistic behavior. Thus, the opportunistic exclusion of expenses from non-GAAP earnings is a choice made by *managers* when reporting the firm's performance and could be influenced by the personality characteristics of the managers.

Given the flexible nature of non-GAAP earnings disclosure, we predict that narcissistic CEOs are more likely to opportunistically define non-GAAP earnings to create a more positive appearance of their firms' financial performance. Narcissistic CEOs are likely looking (1) for respect within the business community (entitlement), (2) to be complemented for their firm's performance (superiority), (3) to be recognized as superior and more capable than others (superiority and self-sufficiency), (4) to be the center of attention (exhibitionism), and (5) to manipulate others (exploitativeness). We contend that these personality characteristics increase the likelihood that management decides to use exclusions opportunistically to increase non-GAAP earnings and portray the firm and CEO in a favorable light.⁴

We examine our predictions using a panel dataset of 19,092 firm-quarter observations from 1996 to 2014 with 923 CEOs at 716 unique firms. We measure CEO narcissism as a composite measure of three indicators employed in prior literature, namely, (1) CEO's relative cash pay, (2) CEO's relative non-cash pay, and (3) size and prominence of the CEO's picture in the firm's annual report.⁵ We examine three hypotheses related to how CEO narcissism affects the frequency, magnitude, and quality of non-GAAP exclusions. First, we find that CEO narcissism is positively associated with the likelihood of excluding expenses from non-GAAP earnings, which suggests that narcissistic CEOs are more likely to use a non-GAAP figure that exceeds its GAAP counterpart. The percentage increase from the 1st to 10th decile of our narcissism measure is approximately

¹ In 2003, the Securities and Exchange Commission (SEC) implemented Regulation G, requiring firms to reconcile non-GAAP earnings (Baumker, Biggs, McVay, and Pierce 2014). However, the practice of issuing non-GAAP earnings has increased dramatically in the past few years, reaching levels not seen since the early 2000s (Lahart 2016a; Shumsky and Francis 2016). In May 2016, the SEC released several new guidelines on the use and presentation of non-GAAP earnings (Yu 2017).

² We recognize that other c-suite executives could play a role in the firm's financial reporting decisions. We focus on the CEO as the face of the firm and the executive who sets the overall "tone from the top" of the firm (Hambrick 2007).

³ Baumker et al. (2014) state that "Regulation G requires that firms disclosing non-GAAP earnings measures (1) provide a comparable GAAP measure, (2) reconcile the non-GAAP measure to the GAAP measure, and (3) file, within five days, a Form 8-K that explains why management believes the non-GAAP measure to be useful to investors."

⁴ Entitlement, superiority, self-sufficiency, exploitativeness, and exhibitionism are five subcomponents of narcissism that we expect are driving the relation between non-GAAP earnings and CEO narcissism (Raskin and Terry 1988).

⁵ Chatterjee and Hambrick (2007) first developed a similar measure, which has been cited more than 1,200 times in the literature. This study is still a joint test of this proxy and the hypotheses.

60 percent (41.2 percent) of the percentage increase from the 1st to 10th decile of firm size (book-to-market). Second, we find evidence that CEO narcissism is positively associated with the magnitude of non-GAAP exclusions, which suggests that narcissistic CEOs are more aggressive in excluding expenses from non-GAAP earnings. The percentage increase from the 1st to 10th decile of our narcissism measure is approximately 22.9 percent (76.4 percent) of the percentage increase from the 1st to 10th decile of return-on-assets (size). Finally, we find that narcissistic CEOs exclude more persistent expenses from non-GAAP earnings, which suggests that the exclusions of narcissistic CEOs are lower-quality.

We continue our analysis by examining how narcissistic CEOs could benefit from opportunistically using exclusions. [Doyle et al. \(2013\)](#) and [Jennings, Seo, and Soliman \(2020\)](#) suggest that analysts are unable to fully identify and reverse opportunistic exclusions made by managers. Because not all exclusions are opportunistic, analysts may have difficulty differentiating between opportunistic and non-opportunistic exclusions. If analysts are not able to fully identify which exclusions are opportunistic, then managers could benefit from opportunistically excluding items that (1) increase the likelihood of beating analyst forecasts ([Doyle et al. 2013](#)), or (2) improve the firm's performance ranking ([Jennings et al. 2020](#)).

First, we provide mixed evidence that narcissistic managers who use exclusions are more likely to have a higher performance ranking within the industry. Analysts, the media, and investors partially evaluate a firm's performance relative to other firms in the industry ([Jennings et al. 2020](#)). We expect narcissistic CEOs to have an incessant desire to perform or appear to perform better than their peers. Non-GAAP exclusions are one way narcissistic CEOs can inflate firm performance to appear to perform better than others in the industry, garner more respect and attention, and appear to be superior managers. Second, we provide limited evidence that narcissistic CEOs are more likely to exclude expenses to meet or beat expectations. We also provide limited evidence that narcissistic CEOs are more likely to exclude expenses when meeting or beating expectations and the balance sheet is more constrained ([Barton and Simko 2002](#)), which suggests that managers are more likely to turn to non-GAAP earnings to manage reported earnings when within-GAAP methods are constrained ([Doyle et al. 2013](#)). Despite these mixed results, we believe that our results documenting an association between narcissistic CEOs and the use/quality of exclusions is important given the results from the prior research, which suggest that investors do not fully understand the pricing implications of non-GAAP exclusions (e.g., [Doyle, Lundholm, and Soliman 2003](#)) and that analysts do not fully unwind opportunistic exclusions (e.g., [Doyle et al. 2013](#)).

We estimate our empirical models using several different measures and specifications. First, we measure non-GAAP earnings using both I/B/E/S actuals and non-GAAP earnings figures directly from earnings press releases ([Bentley, Christensen, Gee, and Whipple 2018](#)). Second, we estimate our empirical models with and without firm fixed effects. Third, we reestimate our models using alternative narcissism measures (e.g., picture size and signature size). Generally, our robustness tests confirm our inferences; however, in some cases, they do not (e.g., signature size tests). We highlight when the results do and do not hold in the results section.

Our study is among the first to provide evidence that managerial personality characteristics influence the use and quality of non-GAAP earnings. Our findings suggest that more narcissistic CEOs are more likely to issue lower-quality non-GAAP earnings figures. Our contribution to the non-GAAP literature is as follows. First, we document a manager-specific effect (i.e., narcissism), as opposed to a firm-specific effect, on non-GAAP earnings. The prior literature primarily documents firm-specific effects (e.g., [Leung and Veenman 2018](#); [Black, Christensen, Ciesielski, and Whipple 2018](#)). In addition, we explicitly focus on CEO narcissism as a driver of the manager-specific effect. We believe that our study is the first to move past an examination of firm characteristics and toward an examination of management's personality characteristics. Our paper builds on the non-GAAP literature that attempts to open the "firm black box" by focusing on manager-specific effects and on the literature that attempts to open the "manager black box" by focusing on a specific manager-specific characteristic—CEO narcissism.

Our results are important given the increased attention non-GAAP earnings are receiving from regulators, business press, and academics alike. In particular, the opportunistic use of non-GAAP earnings is a concern expressed by the SEC. In 2016, SEC Chairman Mary Jo White stated that "we have a lot of concern in that space" when speaking about non-GAAP earnings ([Michaels and Rapoport 2016](#)). The SEC is also considering additional regulation to "curb some of the freedoms firms enjoy" when providing non-GAAP earnings ([Michaels and Rapoport 2016](#)). Our findings are useful in identifying which firms may be more likely to opportunistically use non-GAAP earnings to portray a more favorable image of their performance.

We also contribute to the literature examining the effect of a manager's personality characteristics on his or her firm's policies and performance ([Graham, Harvey, and Puri 2013](#); [Malmendier and Tate 2005](#)).⁶ While prior research examines the effect of CEO narcissism on firm performance measures ([Olsen et al. 2014](#)), corporate taxes ([Olsen and Stekelberg 2016](#)), fraud

⁶ Prior research provides evidence that manager fixed effects are associated with financial reporting and voluntary disclosure decisions (e.g., [Bertrand and Schoar 2003](#); [Dyreng, Hanlon, and Maydew 2010](#)). However, a simple managerial fixed effects dummy cannot distinguish between specific personal characteristics, managerial styles, managerial motivations, or other operational decisions since all of those attributes are grouped together in a single indicator variable. We attempt to shed some light on the more specific managerial characteristics.

(Rijsenbilt and Commandeur 2013), and auditing (Judd, Olsen, and Stekelberg 2017), we are the first to examine the effect of CEO narcissism on non-GAAP earnings. We add to prior CEO narcissism research by highlighting how narcissistic CEOs take advantage of discretion in financial reporting disclosures to inflate firm performance and, by extension, their own performance.

II. PRIOR LITERATURE AND HYPOTHESIS DEVELOPMENT

Non-GAAP Earnings

Managers calculate non-GAAP earnings (also called “pro forma” or “street” earnings) by excluding non-recurring items (i.e., expenses or revenues) from GAAP earnings. The intended goal of non-GAAP earnings is to provide additional information to investors by identifying the portion of earnings that is expected to persist (i.e., core earnings). Several studies provide evidence that non-GAAP earnings are useful for equity valuation purposes (e.g., Bradshaw et al. 2018; Bhattacharya et al. 2003; Brown and Sivakumar 2003; Bradshaw and Sloan 2002), which is reasonable given that non-GAAP earnings remove non-recurring items that are not considered part of “permanent earnings.” However, the flexibility, discretion, and ambiguity involved with defining non-GAAP earnings allow managers to opportunistically *choose* the type and amount of revenues or expenses to exclude from the calculation of non-GAAP earnings with the intent of improving the firm’s appearance (Doyle et al. 2013; Frederickson and Miller 2004). Thus, non-GAAP earnings can be a tool used by managers to create a more favorable picture of their firm.

While the use of non-GAAP earnings has recently increased and regained prominence (Lahart 2016a; Shumsky and Francis 2016), it is not a new phenomenon. The business press, SEC, and academic research have examined and studied non-GAAP earnings since the early 2000s. In 2003, the Securities and Exchange Commission (SEC) issued Regulation G to rein in the opportunistic use of non-GAAP earnings (Weil 2003). Despite attempts to curtail the opportunistic use of non-GAAP earnings, the use of non-GAAP earnings is again on the rise and has reached levels not seen since the early 2000s (Lahart 2016a; Shumsky and Francis 2016). The increased prominence of non-GAAP earnings has prompted renewed attention from the SEC, with Chairman Mary Jo White commenting that the use of non-GAAP earnings may need further regulation (Lahart 2016b; Michaels and Rapoport 2016). In May 2016, the SEC released several new guidelines on the use and presentation of non-GAAP earnings (Yu 2017). Based on the above discussion, understanding what drives the use of non-GAAP earnings is an important topic to regulators, the business press, and academics; more so if this use is deemed to be opportunistic.

Prior research examining the opportunistic use of non-GAAP earnings highlights the significance of both the magnitude and frequency of non-GAAP earnings (Doyle et al. 2003; Bradshaw and Sloan 2002). Other research has focused on the quality of non-GAAP earnings (Frankel, McVay, and Soliman 2011; Kolev, Marquardt, and McVay 2008), while yet other papers examine the opportunistic use of non-GAAP exclusions to surpass salient benchmarks, such as analyst expectations (Doyle et al. 2013; Black and Christensen 2009; Bowen, Davis, and Matsumoto 2005). We build upon these prior findings to make predictions about how a specific managerial trait—CEO narcissism—influences the use of non-GAAP earnings.

CEO Narcissism

Upper echelons theory suggests that organizational choices, which would include the use of non-GAAP earnings, are influenced by the personality characteristics of the firms’ management (Hambrick 2007; Hambrick and Mason 1984). A burgeoning literature in management, finance, and accounting examines the effect of managers’ personality characteristics on firm policies and performance (Graham et al. 2013; Malmendier and Tate 2005; Bertrand and Schoar 2003). CEO narcissism, in particular, has received significant attention (Cragun et al. 2020).⁷

Narcissism is a personality trait characterized by a grandiose sense of self, arrogance, exploitativeness, vanity, and lack of empathy (Raskin and Terry 1988). Fueled by a desire for achievement, power, and status, narcissists are known to ascend corporate ladders to executive positions (Brunell et al. 2008; Maccoby 2000). While their charisma and confidence help them excel, narcissists also exhibit more negative traits such as arrogance, exploitativeness, and vanity (Resick, Whitman, Weingarden, and Hiller 2009). These behavioral tendencies of a narcissist are accompanied by a relentless seeking out of self-enhancement opportunities (Campbell et al. 2011). Narcissists are known to exploit situations to be more in their favor. Indeed, their need for external self-affirmation is incessant, motivating them to create ways of getting the admiration and adulation of others (Morf and Rhodewalt 2001; Campbell, Reeder, Sedikides, and Elliot 2000).

⁷ Other CEO characteristics could impact non-GAAP figures. We believe that the paper would become unwieldy if multiple theoretical explanations were needed to link each CEO trait and non-GAAP exclusions. We also believe that one of the primary contributions of this study is that CEO personality characteristics can influence the non-GAAP exclusions. We use one CEO personality characteristic—narcissism—to provide evidence supporting this contribution.

Research in accounting on CEO narcissism has found that narcissistic CEOs can significantly affect their firms' accounting-related outcomes and choices. Olsen et al. (2014) find that narcissistic CEOs influence their firms' earnings through real-activities manipulations. Olsen and Stekelberg (2016) find that narcissistic CEOs are more likely to use corporate tax shelters, have lower effective tax rates, and report higher uncertain tax benefits (UTBs). Judd et al. (2017) find that narcissistic CEOs are more likely to have internal control weaknesses and that auditors charge higher audit fees to firms with more narcissistic CEOs. In a more extreme outcome, Rijsenbilt and Commandeur (2013) find that CEO narcissism is related to fraud, as captured by Accounting and Auditing Enforcement Releases (AAERs) from the SEC.⁸ The balance of these findings are consistent with other work that suggests that narcissistic CEOs can and do use accounting numbers, financial reporting features, and disclosures to improve the appearance of their firm, likely with the end goal of enhancing their own self-image (Amernic and Craig 2010; Anderson and Tirrell 2004).

Hypotheses

We extend the non-GAAP literature by examining the relation between CEO narcissism and the use of non-GAAP earnings. We expect narcissistic managers to be more likely to use exclusions because they have an intrinsic need to perform better than their peers. Based on the seven subcomponents of narcissism described by Raskin and Terry (1988), we believe that a narcissist's need to perform better than his or her peers is best described by the following subcomponents of narcissism: superiority, self-sufficiency, entitlement, exploitativeness, and exhibitionism.⁹ Narcissistic CEOs are likely looking for respect within the business community (entitlement), to be complemented for their firm's performance (superiority), to be recognized as superior and more capable than others (superiority and self-sufficiency), to be the center of attention (exhibitionism), and to manipulate others (exploitativeness) when opportunistically using exclusions to increase non-GAAP earnings.

The determination of non-GAAP earnings is sufficiently flexible that managers have the discretion and opportunity to create a more favorable appearance of their firm through the exclusions of expenses from non-GAAP earnings (Doyle et al. 2013; Frederickson and Miller 2004). Furthermore, the use of non-GAAP exclusions is a setting that does not require any accounting journal entries to be made. Therefore, non-GAAP earnings is arguably a more malleable and presumably less costly avenue by which narcissistic CEOs could exert influence on how investors perceive firms' performance. We posit that narcissistic CEOs are more likely to use non-GAAP earnings as a tool to portray a more positive image of their firms' financial performance. We state our first hypothesis as follows:

H1: CEO narcissism is positively associated with the likelihood of non-GAAP earnings exceeding GAAP earnings.

Narcissists are more likely to exhibit aggressive, risk-taking behaviors (Ingersoll, Glass, Cook, and Olsen 2019). They favor bold actions in an attempt to gather attention and praise (Chatterjee and Hambrick 2007). Narcissists perceive higher rewards and more positive outcomes from risky behaviors (Foster, Shenese, and Goff 2009). Non-GAAP exclusions are often related to items considered to be transitory, which often arise from business failures, impairments, or difficult economic circumstances (Bradshaw and Sloan 2002). Thus, non-GAAP earnings can represent or signal the manager's belief about what the firm's core performance is or will be. For a narcissistic CEO, a spin of positivity about future performance is especially likely due to their inflated beliefs about their own abilities and their lack of responsiveness to negative stimuli (Chatterjee and Hambrick 2011). Further, the discretion involved in defining non-GAAP earnings creates an opportunity for narcissistic CEOs to opportunistically influence the appearance of their firms' financial performance, even at the risk of misleading analysts and investors.

Given the potential rewards of garnering higher valuations and the favorable attention received by reporting higher financial performance, we argue that narcissistic CEOs are likely to be more aggressive in defining non-GAAP earnings such that the magnitude of income-increasing exclusions is larger for narcissistic CEOs. We state our second hypothesis as follows:

H2: CEO narcissism is positively associated with the magnitude of income-decreasing items excluded from non-GAAP earnings.

⁸ Ham, Lang, Seybert, and Wang (2017) recently extend the examination of narcissistic executives to look at the CFO. They find that more narcissistic CFOs are more likely to manage earnings, have less timely loss recognition, have weaker internal controls, and have more restatements. In the case of public disclosure such as non-GAAP earnings, we believe that the CEO stands the most to gain from this type of manipulation. As Ham et al. (2017) find in their paper, the CEO and CFO have differing and incremental roles. We also primarily utilize the CEO narcissism measure that was originally developed by Chatterjee and Hambrick (2007). We believe that employing differing narcissism measures will enhance the literature and add breadth to the study of this issue. Many papers in the literature use similar measures of narcissism to ours (Cragun et al. 2020). We note that any empirical test examining CEO narcissism is a joint test of the hypothesis and proxy.

⁹ Authoritativeness and vanity are the other two subcomponents of narcissism (Raskin and Terry 1988). We expect authoritativeness and vanity to be less likely to drive the relation between the use of non-GAAP exclusions and CEO narcissism. Authoritativeness can be described as a person seeing him- or herself as a leader over others. Vanity can be described as a person liking his or her appearance. We believe that the other five subcomponents more clearly describe the relation between the use of non-GAAP earnings and CEO narcissism.

If a narcissistic CEO is more aggressive and opportunistic in excluding expenses from non-GAAP earnings, then we expect the exclusions made by a narcissistic CEO to be of lower quality. Non-GAAP exclusions should only be transitory items (i.e., non-recurring) and not permanent items (i.e., expected to persist). If non-GAAP exclusions have predictive ability for future performance, this signals a more permanent or “low-quality” exclusion (Frankel et al. 2011; Kolev et al. 2008; Gu and Chen 2004; Doyle et al. 2003). In contrast, if non-GAAP exclusions are not related to future performance, then they are considered more transitory or “high-quality” (Frankel et al. 2011). Thus, the persistence of non-GAAP exclusions can be an indicator of managerial opportunism such that the existence of low-quality or persistent non-GAAP exclusions signals that managers excluded more permanent items from the supposedly “core” or stable non-GAAP earnings number. The persistence of non-GAAP exclusions has been shown to be affected by firms’ upper-level management. For example, Frankel et al. (2011) show that having a more independent board of directors is associated with higher-quality non-GAAP exclusions or, in other words, a curtailing of managerial opportunism in the choice of exclusions. We expect that narcissistic CEOs are more likely to define non-GAAP exclusions opportunistically. Therefore, we expect narcissistic CEOs to have more persistent non-GAAP exclusions, which is how we measure the quality of non-GAAP earnings. We state our third hypothesis as follows:

H3: Narcissistic CEOs have non-GAAP exclusions that are more persistent (i.e., lower-quality).

There are several reasons that work against finding support for our hypotheses. The neoclassical view of the firm has as a central tenet that managers are perfect substitutes (Bertrand and Schoar 2003). That is, the null hypothesis in our setting is that individual managers have no effect on firm outcomes. If this rational and theoretical approach is taken, then we would not expect to find that variations in any CEO characteristics affect non-GAAP exclusions. CEO narcissism would have no effect on the firm’s financial reporting behavior. Thus, our hypotheses stand in contrast to the presumed world view of neoclassical economics. If we allow for the possibility that CEO characteristics matter (Hambrick 2007; Hambrick and Mason 1984), then we still face other countervailing factors that create tension in our hypotheses. For example, corporate governance mechanisms, SEC and GAAP reporting requirements, and complicated financial accounting regulations all work to curtail the effect of CEO personality traits on financial reporting practices. In the end, our hypothesized associations involving the effect of CEO narcissism on a firm’s non-GAAP reporting behavior and quality is an empirical question.

III. RESEARCH DESIGN

Narcissism Measure

We measure CEO narcissism as a composite measure of three indicators, namely, (1) CEO’s relative cash pay, (2) CEO’s relative non-cash pay, and (3) size and prominence of the CEO’s picture in the firm’s annual report.^{10,11} This narcissism measure is an abridged measure of the CEO narcissism measure initially developed by Chatterjee and Hambrick (2007), which has been commonly used to measure CEO narcissism (e.g., Cragun et al. 2020).^{12,13,14} We measure CEO’s relative cash pay as CEO’s salary and bonus relative to the salary and bonus of the second-highest paid executive. We measure CEO’s relative non-

¹⁰ We focus on the CEO because the CEO is the face of the firm and ultimate decision maker at the firm. We did not perform a similar narcissism analysis for CFOs because CFO pictures in annual reports are relatively rare, and it is unclear whether a measure of the CFO’s compensation relative to the compensation of other employees would be diagnostic.

¹¹ It is possible that the composite narcissism measure partially captures the CEO’s compensation incentives as they relate to disclosure and performance (e.g., Guest, Kothari, and Pozen 2018), which could introduce endogeneity concerns. There are three reasons why we do not believe endogeneity to be a significant concern. First, our narcissism measure uses relative compensation and not total compensation. Guest et al. (2018) use total compensation. Second, we measure narcissism prior to the CEO defining exclusions. Third, we reestimate our empirical results using just photo size and generally find qualitatively similar results; see Section V. Nevertheless, we cannot fully eliminate concerns of endogeneity.

¹² Chatterjee and Hambrick (2007) also used the prominence of the CEO in the firm’s press releases and the CEO’s use of first-person pronouns in interviews; however, Chatterjee and Hambrick (2011) find the use of first-person pronouns is unreliable post-Sarbanes-Oxley.

¹³ We perform additional untabulated validation tests similar to those used by Chatterjee and Hambrick (2007). We find a correlation of 0.82 in the narcissism scores for the same CEO at two different firms; however, our sample only has five CEOs who appear at two different firms. For the 171 firms that have multiple CEOs in our sample, we find that a correlation between the narcissism measures of two CEOs at the same firm is 0.17. These results suggest that the *Narcissism* measure is more likely to capture a CEO characteristic rather than a firm characteristic. We also examine the stability of our CEO narcissism measure over time. We remeasure narcissism using years 5 and 6 (instead of years 2 and 3) of the CEO’s tenure for a random subsample of 100 CEOs and find a correlation of 0.54 ($p < 0.01$) between the two narcissism measures, which suggests stability over time (Zhu and Chen 2015b).

¹⁴ Prior research provides several validation tests of the narcissism measure developed by Chatterjee and Hambrick (2007) by examining its correlation with third-party raters of a CEO’s narcissism (e.g., Chatterjee and Hambrick 2007; Patel and Cooper 2014; Zhu and Chen 2015a). O’Reilly, Doerr, Caldwell, and Chatman (2014) had employees rate their CEOs’ narcissism and then provided evidence that narcissistic CEOs have larger pay discrepancies compared to other executives at their firm, which provides additional support that the CEO’s relative pay is an indicator for narcissism. Together, these prior validation tests provide evidence that our measure captures CEO narcissism.

cash pay as the CEO's total compensation less cash compensation relative to that of the second-highest paid executive. We measure the size and prominence of the CEO's picture in the firm's annual report as follows:

- (1) The annual report does not contain a photograph of the CEO;
- (2) The CEO was photographed with other executives;
- (3) The CEO was photographed alone and the photograph occupies less than half of a page;
- (4) The CEO was photographed alone and the photograph occupies at least half of a page, and the photograph shares the page with text; and
- (5) The CEO was photographed alone and the photograph occupies the entire page.

We average each of these measures over years 2 and 3 of a CEO's tenure. We create our narcissism measure using factor weightings and the standardized values of the three components.¹⁵ *Narcissism* is our continuous summary measure of CEO narcissism. We apply our estimate of CEO narcissism to all firm-quarter observations beginning in year 4 of the CEO's tenure. The CEO narcissism measure that we employ is static for each CEO-firm combination. If a CEO changes firms, then we estimate a new CEO narcissism measure. We note that we consider other narcissism scores in additional tests below.

Sample Selection

Our measure of CEO narcissism is a key restriction on our sample size due to limitations on data that are publicly available (i.e., relative compensation) and hand-collected (CEO pictures). Following prior research ([Olsen et al. 2014](#); [Chatterjee and Hambrick 2007](#)), our design requires a CEO to have a minimum of four years tenure. We specifically require the availability of the firm's annual report and compensation data for years 2 and 3 of the CEO's tenure to capture our narcissism measure and then at least one year of data thereafter. We first identify all CEOs meeting the compensation data requirements on Execucomp, yielding a sample of 1,378 CEOs. We add hand-collected data of the CEO's picture size and prominence rating in companies' annual reports gathered from Mergent Online and company websites. Imposing this restriction yields a sample of 1,109 CEOs representing 23,628 firm-quarter observations. We require necessary company data from Compustat and I/B/E/S. In our first set of results, we proxy for non-GAAP earnings using I/B/E/S actuals. After imposing this restriction, we are left with a final sample of 19,092 firm-quarter observations with 923 CEOs at 716 unique firms spanning firm-years 1996 to 2014. We use this sample in our tests of H1 and H2. The sample size is reduced to 13,678 firm-quarter observations in our test of H3 due to the lead-lag empirical design.

Alternative Data Source

In our empirical testing, we use both I/B/E/S actuals, as well as non-GAAP earnings figures that are found in the earnings press release, to proxy for non-GAAP earnings in our tests.¹⁶ There are pros and cons to each measure. Using I/B/E/S actuals as a proxy for non-GAAP earnings figures has several advantages. First, I/B/E/S is an easy-to-access machine-readable dataset that can be accessed by a large number of researchers (whereas non-GAAP earnings figures must be collected from individual press releases). Second, I/B/E/S provides non-GAAP earnings figures for a large number of firms, which allows for the researcher to increase the sample size of their study. Using smaller sample sizes may reduce the power of the statistical test, which could lead to more Type II errors (i.e., not rejecting the null when it is false). Third, I/B/E/S non-GAAP earnings figures better represent what the market believes non-GAAP earnings are for the firm. I/B/E/S non-GAAP earnings remove the exclusions made by managers that analysts believe are opportunistic ([Easton 2003](#)).

There are also disadvantages to using I/B/E/S earnings per share (EPS) as a proxy for non-GAAP earnings figures. First and foremost, I/B/E/S non-GAAP earnings figures do not always include the actual exclusions identified by managers. Analysts disallow exclusions if they believe that the exclusions have opportunistic motives and are not used to inform investors. [Bentley et al. \(2018\)](#) also provide evidence that I/B/E/S non-GAAP earnings sometimes differ from GAAP earnings when managers do not make any exclusions. Therefore, I/B/E/S non-GAAP earnings do not always represent the exclusions made by managers. Accordingly, we reestimate our analyses using the [Bentley et al. \(2018\)](#) data. The [Bentley et al. \(2018\)](#) dataset requires an 8-K for each observation. This requirement further reduces the sample size when re-running our models using only their data, but we believe that using both of these measures increases the verifiability of our results.

¹⁵ The three components load on a single factor (eigenvalue > 1.00) with factor loadings of 0.69 for relative cash pay, 0.61 for relative non-cash pay, and 0.64 for the photograph rating.

¹⁶ We thank [Bentley, Christensen, Gee, and Whipple \(2018\)](#) for graciously sharing their hand-collected dataset.

Regression Models and Variables

We create two dependent variables—*Exclude* and *Non-GAAP Exclusions*—to test H1 and H2. We measure non-GAAP exclusions (*Non-GAAP Exclusions*) as I/B/E/S-reported Actual earnings per share (EPS) less GAAP EPS (Doyle et al. 2013). GAAP EPS is the earnings per share before extraordinary operations and discontinued operations. *Exclude* captures the existence of non-GAAP earnings and is an indicator variable equal to 1 if I/B/E/S Actual EPS is greater than GAAP EPS. In our second set of tests, we replace I/B/E/S Actual EPS with non-GAAP earnings collected from 8-Ks, as described by Bentley et al. (2018), and recalculate *Exclude* and *Non-GAAP Exclusions*.

We estimate the following model to test H1. We expect a positive coefficient on *Narcissism*.

$$\text{Exclude}_{i,q} = \beta_0 + \beta_1 \text{Narcissism}_{i,q} + \beta_2 \text{BTM}_{i,q} + \beta_3 \text{SalesGrowth}_{i,q} + \beta_4 \text{SizeEquity}_{i,q} + \beta_5 \text{Profitable}_{i,q} + \beta_6 \text{ROA}_{i,q} + \text{Industry} + \text{Year-Quarter} + \varepsilon_{i,q} \quad (1)$$

We estimate the following model to test H2. Similar to Equation (1), we expect a positive coefficient on *Narcissism*.

$$\text{Non-GAAP Exclusions}_{i,q} = \beta_0 + \beta_1 \text{Narcissism}_{i,q} + \beta_2 \text{BTM}_{i,q} + \beta_3 \text{SalesGrowth}_{i,q} + \beta_4 \text{SizeEquity}_{i,q} + \beta_5 \text{Profitable}_{i,q} + \beta_6 \text{ROA}_{i,q} + \text{Industry} + \text{Year-Quarter} + \varepsilon_{i,q} \quad (2)$$

In these first two models, we include several control variables, following prior research (Doyle et al. 2013). *BTM* is the book-to-market ratio and is equal to the book value of equity divided by the market value of equity for firm *i* in quarter *q*. *SalesGrowth* is the growth in sales and is equal to sales for firm *i* in quarter *q* divided by sales in quarter *q*–4. *SizeEquity* is equal to the natural logarithm of the market value of equity at the end of quarter *q*. *Profitable* is an indicator variable equal to 1 if I/B/E/S Actual EPS is positive, and equal to 0 otherwise. We also include a control for firm performance, *ROA*, which is equal to I/B/E/S Actual EPS divided by total assets per share for firm *i* in quarter *q*. Finally, we include industry (two-digit SIC) fixed effects and year-quarter fixed effects. We cluster the standard errors by firm and year-quarter.

We follow Frankel et al. (2011) to construct our model to test H3:

$$\text{Future Earnings}_{i,q+1 \text{ to } q+4} = \beta_0 + \beta_1 \text{Non-GAAP Earnings}_{i,q} + \beta_2 \text{Non-GAAP Exclusions}_{i,q} + \beta_3 \text{Narcissism}_{i,q} + \beta_4 \text{Non-GAAP Earnings}_{i,q} * \text{Narcissism}_{i,q} + \beta_5 \text{Non-GAAP Exclusions}_{i,q} * \text{Narcissism}_{i,q} + \text{Controls}_{i,q} + \varepsilon_{i,q} \quad (3)$$

Following Frankel et al. (2011), we use two earnings-based dependent variables from the income statement. The first dependent variable, *Future GAAP Earnings*, is equal to EPS before extraordinary items summed over the next four quarters.¹⁷ The second dependent variable, *Future Operating Income*, is equal to the operating income per diluted share summed over the next four quarters.

We expect the coefficient on *Non-GAAP Earnings* to be positive, which suggests that non-GAAP earnings are persistent. Since *Non-GAAP Exclusions* is increasing as the expenses excluded from non-GAAP earnings increase, we expect the coefficient on *Non-GAAP Exclusions* to be negative if non-GAAP exclusions are persistent. The coefficient on the interaction between *Non-GAAP Exclusions* and *Narcissism* is the coefficient of interest. If narcissistic CEOs are more likely to have more persistent and lower-quality exclusions, then we expect this coefficient to be negative.

The independent variables are measured as follows. *Non-GAAP Earnings* is equal to I/B/E/S Actual EPS. *SizeAssets* is equal to the natural logarithm of total assets. *Loss* is an indicator variable equal to 1 if quarterly GAAP earnings are less than zero. *Volatility* is the standard deviation of *ROA* over the preceding eight quarters. *Narcissism* and *SalesGrowth* are as previously defined.¹⁸ We continue to include industry fixed effects and year-quarter fixed effects. We also continue to cluster standard errors by firm and year-quarter.¹⁹

¹⁷ Inferences are unchanged if we scale by assets rather than shares.

¹⁸ Frankel et al. (2011) interact the *Board Independence* variable with all the control variables. If we interact *Narcissism* with each of our control variables, our results are qualitatively similar.

¹⁹ We do not include governance variables such as *Board Independence* and *Duality* in our main results due to data limitations significantly reducing our sample size. In untabulated supplemental analyses, we find that our inferences do not change if these variables are included.

Firm Fixed Effects and Endogeneity

While we include various controls, we recognize that it is possible that omitted firm-specific fundamentals could still be affecting our results. One possible remediation is to include firm fixed effects, which would control for time-invariant firm-specific characteristics or fundamentals. In as much as our results are robust to this alternative specification, it would provide additional support that the observed effects we find are associated with CEO narcissism rather than the firm-specific characteristics (Judd et al. 2017; Olsen and Stekelberg 2016; Malmendier and Tate 2005).²⁰

Including firm fixed effects in an empirical model does not come without some limitations. For example, logistics models can be biased when firm fixed effects are included due to the incidental parameters problem. In Equation (1), we use a logistic regression because the dependent variable (*Exclude*) is dichotomous. In addition, firm fixed effects models can amplify the effects of sample selection bias. We require CEOs to be employed by their respective firms for four years to estimate the *Narcissism* variable, resulting in a sample of firms without CEOs who turn over quickly. The firm fixed effect model requires turnover in the CEO in order to give rise to variation in the *Narcissism* variable. Malmendier and Tate (2005) face a similar problem in examining CEO personality characteristics for which there are little or no variation over time within the same firm.²¹ In these circumstances, measures of CEO characteristics may fail to detect significant effects of individual CEOs even if they exist (Adams, Almeida, and Ferreira 2005; Zhou 2001). The inclusion of firm fixed effects could reduce our ability to find results (e.g., Type II errors).

Despite the possible limitations from including firm fixed effects, we nevertheless provide results from such specifications for the sake of completeness across all of our tabulated tests. We report these results beside the regressions results (i.e., in Column (2)) from Equations (1), (2), and (3) in each table. To reduce the likelihood of an incidental parameters problem, we reestimate all logit models using an ordinary least squares (OLS) specification (i.e., a linear probability model) with firm fixed effects.^{22,23}

IV. RESULTS

Descriptive Statistics and Correlations

Table 1, Panel A provides descriptive statistics for the variables used in our analysis. All variable definitions can be found in Appendix A. We identify several interesting takeaways that we highlight below. First, *Profitable* is equal to 0.922, which suggests that more than 92 percent of the firm-quarters have positive earnings. Consistent with the value of *Profitable*, we also note that the average and median *ROA* values are positive. *Exclude* is equal to 0.442, which suggests that more than 44 percent of the firm-quarters in our sample exclude some GAAP expenses from non-GAAP earnings. The average (median) *SalesGrowth* value is equal to 1.083 (1.067), suggesting that the average firm-quarter in our sample experiences 8.3 percent growth in quarterly sales relative to the same quarter of the previous year.

Table 1, Panel B includes the pair-wise correlations. We find that *Narcissism* has a positive and statistically significant association with *Exclude* and *Non-GAAP Exclusions* ($p < 0.01$), providing preliminary support that narcissistic CEOs are more likely to exclude income-decreasing items from non-GAAP earnings and that non-GAAP exclusions are larger (H1 and H2). We also note that narcissistic CEOs are more likely to report lower sales growth (*SalesGrowth*) and earnings (*ROA*); however,

²⁰ We observe 171 firms that switch once or twice, resulting in a total of 185 switches. We have 716 unique firms in our dataset. Thus, the firm fixed effect analysis relies upon 23.88 percent of the firms in the sample (171/716). The median absolute value of the change in the *Narcissism* measure for the firms that change CEOs is 61.25 percent of the standard deviation of *Narcissism*, which suggests that the narcissism of the new CEO is different from that of the old CEO.

²¹ Malmendier and Tate (2005), who examined CEO overconfidence and corporate investment, summarized the problem as follows: "Because our measures require a long tenure within the firm to identify a CEO as overconfident . . . there are an insufficient number of cases of overconfident and nonoverconfident CEOs in the same firm to draw robust inferences from any estimations . . . The lack of identifiable cases points to a potentially severe sample selection bias from including fixed effects in panel regressions and identifying solely out of somewhat anomalous firms with multiple short-tenured CEOs."

²² Another possible test to address endogeneity would be to examine instances of the same CEO at multiple firms. Our sample has only five CEOs who appear at two different firms, not allowing for meaningful empirical tests.

²³ We calculate the impact threshold of a confounding variable to assess if time-varying omitted variables could affect our findings (Frank 2000). For our main hypothesis tests, we find that a correlated omitted variable would need an impact larger than that of any of our control variables to overturn the results. Said differently, we would need to replace 41 percent to 63 percent of our sample with observations for which there is no effect (Frank, Maroulis, Duong, and Kelcey 2013). Thus, it is unlikely that our findings are driven by correlated omitted variables.

TABLE 1
Descriptive Statistics and Correlations

Panel A: Descriptive Statistics

Variable	Mean	Median	Std. Dev.	Min	Max
<i>Non-GAAP Exclusions</i>	0.062	0.000	0.329	−0.980	1.970
<i>Exclude</i>	0.442	0.000	0.497	0.000	1.000
<i>Narcissism</i>	−0.030	−0.108	1.218	−2.230	4.656
<i>BTM</i>	0.535	0.457	0.368	−0.069	2.073
<i>SalesGrowth</i>	1.083	1.067	0.216	0.513	1.987
<i>SizeEquity</i>	8.053	7.946	1.555	4.433	12.062
<i>Profitable</i>	0.922	1.000	0.268	0.000	1.000
<i>ROA</i>	0.016	0.014	0.016	−0.030	0.070

All continuous variables are winsorized at the 1 percent and 99 percent levels.
All variables are as defined in Appendix A.

Panel B: Correlations

	Variable	1	2	3	4	5	6	7	8
1	<i>Non-GAAP Exclusions</i>	—	0.876	0.043	0.015	−0.075	0.026	0.038	0.088
2	<i>Exclude</i>	0.485	—	0.059	0.014	−0.064	0.036	0.038	0.076
3	<i>Narcissism</i>	0.031	0.049	—	−0.008	−0.027	0.094	0.044	0.002
4	<i>BTM</i>	0.060	0.015	−0.023	—	−0.226	−0.352	−0.197	−0.595
5	<i>SalesGrowth</i>	−0.094	−0.056	−0.016	−0.183	—	0.087	0.198	0.278
6	<i>SizeEquity</i>	−0.003	0.035	0.100	−0.348	0.067	—	0.237	0.241
7	<i>Profitable</i>	−0.005	0.038	0.034	−0.282	0.182	0.251	—	0.464
8	<i>ROA</i>	0.038	0.060	−0.032	−0.519	0.241	0.262	0.489	—

Table 1, Panel B presents Pearson (below the diagonal) and Spearman (above the diagonal). Correlations in **bold** are statistically significant (two-tailed) at $p < 0.05$. All continuous variables are winsorized at the 1 percent and 99 percent levels.
All variables are as defined in Appendix A.

it appears that narcissistic CEOs are more likely to report positive GAAP earnings (*Profitable*). Narcissistic CEOs are also more likely to run larger firms (*SizeEquity*).

Table 2 partitions our sample into high- and low-narcissism groupings based on whether the CEOs' narcissism score is above the sample median.²⁴ We continue to find preliminary support for H1 and H2. We find that firms are more likely to exclude income-decreasing items from non-GAAP earnings (*Exclude*) when the CEO is more narcissistic (p -value < 0.001) and the exclusions are more likely to be larger (*Non-GAAP Exclusions*) when the CEO is more narcissistic (p -value = 0.020).

Hypotheses Tests

Column (1) of Table 3 presents the results related to H1. We estimate Equation (1) and find a positive and significant (5 percent level) coefficient on *Narcissism*, which is consistent with our hypothesis that firms with more narcissistic CEOs are more likely to exclude income-decreasing items from non-GAAP earnings. To assess economic significance, we decile rank all the independent variables to better understand the relation between CEO narcissism and the likelihood of exclusions. In untabulated results, moving from the 1st to 10th *Narcissism* decile results in a 7.0 percent increase in the likelihood of positive exclusions relative to an 11.6 percent (17.0 percent) increase when moving from the 1st to 10th *SizeEquity* (*BTM*) decile.

²⁴ The number of observations in the high- and low-narcissism groups is slightly different, because we split the sample based on the narcissism score for each CEO-firm combination. In other words, each CEO-firm combination is a unique observation. There are multiple quarters for each CEO-firm observation.

TABLE 2
Univariate Comparison of High and Low Narcissism Observations

Variable	Low Narcissism Sample Mean n = 9,563	High Narcissism Sample Mean n = 9,529	Difference	t-statistic	p-value
<i>Non-GAAP Exclusions</i>	0.057	0.068	0.011	2.320	0.020
<i>Exclude</i>	0.418	0.467	0.050	6.920	<0.001
<i>BTM</i>	0.544	0.526	-0.018	-3.310	<0.001
<i>SalesGrowth</i>	1.086	1.081	-0.005	-1.740	0.082
<i>SizeEquity</i>	7.956	8.151	0.195	8.660	<0.001
<i>Profitable</i>	0.915	0.929	0.013	3.420	<0.001
<i>ROA</i>	0.016	0.016	-0.001	-2.300	0.021

Table 2 presents differences in means between high narcissism and low narcissism observations. All continuous variables are winsorized at the 1 percent and 99 percent levels.

All variables are as defined in Appendix A.

In Column (1) of Table 3, we find a negative (positive) coefficient on *SalesGrowth* (*BTM*), suggesting that growth firms are less likely to exclude GAAP expenses from non-GAAP earnings. We find that larger firms are more likely to exclude income-decreasing items from non-GAAP earnings. The regression results are qualitatively similar when including firm fixed effects in Column (2) and using the Bentley et al. (2018) data with firm fixed effects in Column (3). The coefficient on *Narcissism* using the Bentley et al. (2018) data without firm fixed effects in Column (3) is positive, but not statistically significant.

We present the results using Equation (2) in Column (1) of Table 4. We find a positive and significant (5 percent level) coefficient on *Narcissism*, which is consistent with narcissistic CEOs excluding a higher magnitude of income-decreasing items

TABLE 3
The Effect of CEO Narcissism and the Likelihood of Using Non-GAAP Earnings
DV: Exclude

Variable	I/B/E/S Data				Bentley et al. (2018) Data			
	(1)		(2)		(3)		(4)	
	Coef.	t	Coef.	t	Coef.	t	Coef.	t
<i>Narcissism</i> (H1: +)	0.02**	2.05	0.03***	4.35	0.01	1.25	0.05***	3.33
<i>BTM</i>	0.13***	5.23	0.09***	4.91	0.00	0.10	-0.03	-0.77
<i>SalesGrowth</i>	-0.13***	-4.55	-0.17***	-9.89	0.02	0.49	-0.12***	-4.12
<i>SizeEquity</i>	0.02***	2.78	-0.01	-1.37	0.03***	2.74	0.02	1.11
<i>Profitable</i>	0.08***	3.16	-0.01	-0.55	0.05	1.14	-0.02	-0.57
<i>ROA</i>	1.26*	1.68	5.19***	13.95	-1.49	-1.62	-0.56	-0.84
Firm Fixed Effects	No		Yes		No		Yes	
Industry Fixed Effects	Yes		No		Yes		No	
Year-Quarter Fixed Effects	Yes		Yes		Yes		Yes	
Observations	19,092		19,088		6,353		6,302	
Adjusted R ²	0.07		0.25		0.14		0.34	

***, **, * Indicate coefficients statistically different from zero at the 1 percent, 5 percent, and 10 percent levels (two-tailed), respectively.

All continuous variables are winsorized at the 1 percent and 99 percent levels. Standard errors are clustered by firm and year-quarter for Columns (1) and (3).

All variables are as defined in Appendix A.

TABLE 4
The Effect of CEO Narcissism and the Magnitude of Non-GAAP Exclusions
DV: Non-GAAP Exclusions

Variable	I/B/E/S Data				Bentley et al. (2018) Data			
	(1)		(2)		(3)		(4)	
	Coef.	t	Coef.	t	Coef.	t	Coef.	t
<i>Narcissism</i> (H2: +)	0.01**	2.53	0.01*	1.77	0.01**	1.98	0.01	0.68
<i>BTM</i>	0.09***	4.94	0.02	1.46	0.10***	2.70	0.02	0.51
<i>SalesGrowth</i>	-0.14***	-4.56	-0.17***	-13.24	-0.15**	-2.25	-0.20***	-6.47
<i>SizeEquity</i>	0.00	1.04	-0.06***	-7.77	0.03***	4.49	-0.04*	-1.85
<i>Profitable</i>	-0.01	-0.61	-0.06***	-4.46	-0.12***	-3.09	-0.16***	-5.21
<i>ROA</i>	2.28***	4.12	5.64***	20.90	-0.94*	-1.66	-0.14	-0.20
Firm Fixed Effects	No		Yes		No		Yes	
Industry Fixed Effects	Yes		No		Yes		No	
Year-Quarter Fixed Effects	Yes		Yes		Yes		Yes	
Observations	19,092		19,088		6,353		6,302	
Adjusted. R ²	0.05		0.10		0.09		0.14	

***, **, * Indicate coefficients statistically different from zero at the 1 percent, 5 percent, and 10 percent levels (two-tailed), respectively.

All continuous variables are winsorized at the 1 percent and 99 percent levels. Standard errors are clustered by firm and year-quarter for Columns (1) and (3).

All variables are as defined in Appendix A.

(H2). Similar to Table 3, we assess the economic significance of narcissism by decile ranking all the independent variables into deciles. In untabulated results, moving from the 1st to 10th *Narcissism* decile results in a 2.3 cent increase in exclusions relative to a 10.2 (3.1) cent increase when moving from the 1st to 10th *ROA* (*SizeEquity*) decile. Exclusions are set equal to 0 when I/B/E/S non-GAAP earnings is equal to GAAP earnings. Generally, we continue to find similar coefficient signs on the control variables reported in Column (1) of Table (3). Regression results are qualitatively similar when firm fixed effects are included (Column (2)) and when the Bentley et al. (2018) data without firm fixed effects (Column (3)) is used to estimate the regression. The coefficient on *Narcissism* is positive, but insignificant, when the Bentley et al. (2018) data are used with firm fixed effects (Column (4)).

We test H3 in Table 5 using Equation (3). We present results with *Future GAAP Earnings* as the dependent variable in Panel A and results with *Future Operating Income* as the dependent variable in Panel B. Consistent with expectations, we find a negative and statistically significant coefficient on the interaction between *Non-GAAP Exclusions* and *Narcissism* in Column (1) of Panel A (5 percent level) and Panel B (10 percent level). These results indicate that the non-GAAP exclusions are more persistent when the CEO is more narcissistic. Prior research suggests that non-GAAP exclusions are lower-quality when they are more persistent (Frankel et al. 2011). Thus, our results suggest that narcissistic CEOs make lower-quality exclusions. Our results are consistent with prior research (Frankel et al. 2011) in that we find that our results are similar whether our dependent variable is *Future Operating Income* or *Future GAAP Earnings*.

We report that the regression results for Table 5, Panel A are qualitatively similar when including firm fixed effects in Column (2), using the Bentley et al. (2018) data without firm fixed effects in Column (3), and using the Bentley et al. (2018) data with firm fixed effects in Column (4). We report that the regression results for Panel B are qualitatively similar when using the Bentley et al. (2018) data without firm fixed effects in Column (3) and using the Bentley et al. (2018) data with firm fixed effects in Column (4). When including firm fixed effects in Column (2) of Panel B, the coefficient is negative, but not statistically significant.

The coefficient on the interaction between *Non-GAAP Earnings* and *Narcissism* is negative in several of the regressions in Table 5. We believe that this negative coefficient suggests that the firms with more narcissistic CEOs also have lower-quality earnings (as measured by earnings persistence), possibly due to the manipulation of earnings using other mechanisms (e.g., accruals or real activities management). Since other forms of earnings management are not the focus of our paper, we leave a deeper examination of this to future research.

TABLE 5
The Effect of CEO Narcissism on Exclusion Persistence

Panel A: Dependent Variable is Future GAAP Earnings

Variable	DV = Future GAAP Earnings							
	I/B/E/S Data				Bentley et al. (2018) Data			
	(1)		(2)		(3)		(4)	
	Coef.	t	Coef.	t	Coef.	t	Coef.	t
Non GAAP Earnings	1.75***	8.63	0.98***	38.86	1.65***	5.90	0.83***	18.17
Non-GAAP Exclusions	-0.60***	-5.75	-0.23***	-5.38	0.12***	1.09	0.17***	3.07
Narcissism	-0.03	-0.36	0.17***	5.93	0.17	1.22	0.39***	5.85
Non GAAP Earnings \times Narcissism	0.08	0.61	-0.07***	-4.09	-0.20	-1.31	-0.29***	-9.31
Non-GAAP Exclusions \times Narcissism (H3: -)	-0.17**	-2.42	-0.07**	-2.28	-0.13*	-1.79	-0.10***	-2.56
SizeAssets	0.15***	3.89	0.52***	9.92	0.11**	2.19	0.28***	2.86
SalesGrowth	-0.54***	-3.69	-0.43***	-6.46	-0.75***	-4.47	-0.50***	-4.32
Loss	0.12***	-0.80	-0.19***	-3.75	-0.53***	-2.91	-0.36***	-4.37
Volatility	-32.43***	-5.66	-35.47***	-33.11	-28.90***	-4.96	-33.12***	19.68
Firm Fixed Effects	No		Yes		No		Yes	
Industry Fixed Effects	Yes		No		Yes		No	
Year-Quarter Fixed Effects	Yes		Yes		Yes		Yes	
Observations	13,678		13,676		4,914		4,849	
Adjusted R ²	0.54		0.67		0.52		0.68	

***, **, * Indicate coefficients statistically different from zero at the 1 percent, 5 percent, and 10 percent levels (two-tailed), respectively.

All continuous variables are winsorized at the 1 percent and 99 percent levels. Standard errors are clustered by firm and year-quarter for Columns (1) and (3).

All variables are as defined in Appendix A.

Panel B: Dependent Variable is Future Operating Income

Variable	DV = Future Operating Income							
	I/B/E/S Data				Bentley et al. (2018) Data			
	(1)		(2)		(3)		(4)	
	Coef.	t	Coef.	t	Coef.	t	Coef.	t
Non GAAP Earnings	1.70***	8.29	0.92***	44.82	1.65***	5.93	0.74***	19.79
Non-GAAP Exclusions	-0.47***	-4.87	-0.26***	-7.53	-0.14	1.38	-0.05	1.09
Narcissism	-0.01	-0.16	0.16***	6.61	0.19	1.42	0.33***	6.00
Non GAAP Earnings \times Narcissism	0.07	0.53	-0.07***	-5.01	-0.21	-1.34	-0.24***	-9.13
Non-GAAP Exclusions \times Narcissism (H3: -)	-0.11*	-1.86	-0.03	-1.29	-0.13*	-1.74	-0.08**	-2.54
SizeAssets	0.22***	5.73	0.73***	17.18	0.21***	3.91	0.56***	7.04
SalesGrowth	-0.73***	-5.58	-0.55***	-10.10	-0.96***	-5.41	-0.63***	-6.64
Loss	-0.07	-0.50	-0.05***	-1.24	-0.44***	-2.99	-0.21***	-3.06
Volatility	-15.83***	-5.80	-3.66***	-16.06	-12.62***	-4.40	-13.40***	-9.69
Firm Fixed Effects	No		Yes		No		Yes	
Industry Fixed Effects	Yes		No		Yes		No	
Year-Quarter Fixed Effects	Yes		Yes		Yes		Yes	
Observations	13,678		13,678		4,914		4,849	
Adjusted R ²	0.58		0.73		0.56		0.74	

***, **, * Indicate coefficients statistically different from zero at the 1 percent, 5 percent, and 10 percent levels (two-tailed), respectively.

All continuous variables are winsorized at the 1 percent and 99 percent levels. Standard errors are clustered by firm and year-quarter for Columns (1) and (3).

All variables are as defined in Appendix A.

V. ADDITIONAL ANALYSES

Consequence Tests

Doyle et al. (2013) and Jennings et al. (2020) suggest that analysts are unable to fully identify and reverse opportunistic exclusions made by managers. Because not all exclusions are opportunistic, analysts may have difficulty differentiating between opportunistic and non-opportunistic exclusions. In particular, analysts may be less likely to unwind exclusions made by narcissistic CEOs because analysts may view narcissistic CEOs as charismatic, gregarious, visionary leaders. These qualities can make narcissistic CEOs very persuasive (Maccoby 2000; Cragun et al. 2020) at influencing analysts' beliefs about the firm's future performance through non-GAAP exclusions. Therefore, if analysts are not able to fully identify which exclusions are opportunistic, then managers could benefit from opportunistically excluding items that (1) increase the likelihood of beating analyst forecasts (Doyle et al. 2013), or (2) improve the firm's performance ranking (Jennings et al. 2020).

Our paper extends the findings from these two papers by examining whether narcissistic CEOs use opportunistic exclusions to (1) increase the likelihood of meeting or beating analyst expectations (Doyle et al. 2013), or (2) achieve a higher performance ranking (Jennings et al. 2020). Because of the information asymmetry between managers and analysts, it is not clear that analysts are able to fully unwind all opportunistic exclusions from non-GAAP earnings even if the likelihood of opportunistic exclusions is higher among narcissistic CEOs.²⁵ We believe that our main results are important even if we do not find *incremental* consequences of narcissistic CEOs using non-GAAP exclusions because of the results presented by prior research, which suggests that investors do not fully understand the pricing implications of non-GAAP exclusions (Doyle et al. 2003) and that analysts do not fully unwind opportunistic exclusions (Doyle et al. 2013).

Performance-Related Outcomes

Given that our prior results suggest that non-GAAP exclusions are lower-quality, we examine whether narcissistic CEOs who use exclusions are more likely to have more favorable performance-related outcomes. Our theory suggests that more narcissistic CEOs have an incessant desire for superiority, attention, compliments, and respect. One way narcissistic CEOs could partially satisfy these desires is to achieve a higher performance ranking within the industry. We expect that more narcissistic CEOs could use exclusions to achieve a higher industry performance ranking. We anticipate that achieving a higher performance ranking within the industry partially satisfies the narcissistic CEO's desire to perform, or appear to be performing, better than peers.

Following Jennings et al. (2020), we rank firms based on the firm's ROE (return on equity) within the industry (*Firm Ranking*), which we define as six-digit GICS codes. ROE is calculated as firm *i*'s I/B/E/S-reported Actual EPS in quarter *t* multiplied by the weighted-average number of shares outstanding divided by the book value of equity at the beginning of quarter *t*. We use the following model to test whether narcissistic CEOs are more likely to use exclusions to achieve a higher performance ranking.

$$\text{Firm Ranking}_{i,q} = \beta_0 + \beta_1 \text{Narcissism}_{i,q} + \beta_2 \text{Non-GAAP Exclusions}_{i,q} + \beta_3 \text{Narcissism}_{i,q} * \text{Non-GAAP Exclusions}_{i,q} + \text{Controls}_{i,q} + \varepsilon_{i,q} \quad (4)$$

All variables are as previously defined. If narcissistic CEOs are more likely to use exclusions to achieve a higher performance ranking, then we expect a positive coefficient on the interaction between *Narcissism* and *Non-GAAP Exclusions*.²⁶ We include the same control variables from our previous tests. We note that Jennings et al. (2020) examine whether investors and analysts positively respond to *changes* in the firm's performance ranking within the industry. We examine the relation between the *level* of the firm's performance ranking (not the *change* in performance ranking) and CEO narcissism because we

²⁵ We do not believe that *all* narcissistic CEOs are opportunistically using exclusions to meet or beat expectations or increase the firm's performance ranking. We are also not suggesting that *all* CEOs that opportunistically use exclusions are successful in fooling analysts.

²⁶ While non-GAAP earnings are typically higher than GAAP earnings, we do not find evidence that *Exclusions* are mechanically related to the firm's performance ranking. If the use of exclusions and the firm's performance ranking were mechanical, then we would expect a positive relation between the two variables. The Pearson (Spearman) correlation between exclusions and firms' performance ranking is negative and significant at -0.073 (-0.0237) with a p-value of 0.0001 (0.003). In addition, the I/B/E/S database attempts to eliminate non-recurring items from earnings when defining I/B/E/S earnings for *all* firms (Easton 2003), which improves comparability of I/B/E/S non-GAAP earnings. Therefore, the *non-opportunistic* use of exclusions would not likely mechanically inflate the firm's performance ranking as I/B/E/S non-GAAP earnings represent the firm's core earnings for *all* firms. Only *opportunistic* exclusions that are not identified and reversed by analysts should systematically increase the firm's performance ranking. We also do not believe that there is a mechanical explanation for the *enhanced* positive relation between the firm's performance ranking and the use of exclusions when the CEO is more narcissistic, which is what we test using the interaction between *Non-GAAP Exclusions* and *Narcissism* in Equation (4). It is unlikely that the *non-opportunistic* use of exclusions would mechanically inflate the firm's performance ranking as I/B/E/S non-GAAP earnings represent the firm's core earnings for *all* firms.

TABLE 6
The Effect of CEO Narcissism and Non-GAAP Exclusions on Firm Performance Rank

Variable	DV = Firm Ranking							
	I/B/E/S Data				Bentley et al. (2018) Data			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
	Coef.	t	Coef.	t	Coef.	t	Coef.	t
<i>Narcissism</i>	0.01**	2.65	0.00	1.55	0.01*	1.90	0.00	0.83
<i>Non-GAAP Exclusions</i>	−0.05***	−3.23	−0.07***	−18.66	−0.01	−0.74	−0.01**	−2.38
<i>Non-GAAP Exclusions</i> × <i>Narcissism</i> (Expected sign: +)	0.01	1.58	0.01***	3.77	−0.01	−1.18	−0.01*	−1.85
<i>BTM</i>	−0.22***	−11.76	−0.14***	−18.91	−0.20***	−8.68	−0.09***	−7.18
<i>SalesGrowth</i>	−0.02	−0.19	0.01***	2.22	−0.01	−0.40	0.01	0.71
<i>SizeEquity</i>	0.02***	5.39	−0.02***	−4.33	0.02***	4.13	0.01	0.69
<i>Profitable</i>	0.11**	6.87	0.11	17.61	0.08***	3.46	0.10***	8.49
<i>ROA</i>	7.47***	20.94	8.51***	59.62	7.87***	14.64	8.28***	32.07
Firm Fixed Effects	No		Yes		No		Yes	
Industry Fixed Effects	Yes		No		Yes		No	
Year-Quarter Fixed Effects	Yes		Yes		Yes		Yes	
Observations	15,341		15,339		5,432		5,391	
Adjusted R ²	0.57		0.70		0.55		0.69	

***, **, * Indicate coefficients statistically different from zero at the 1 percent, 5 percent, and 10 percent levels (two-tailed), respectively.

All continuous variables are winsorized at the 1 percent and 99 percent levels. Standard errors are clustered by firm and year-quarter for Columns (1) and (3).

All variables are as defined in Appendix A.

believe that narcissistic CEOs are more likely to have a higher *level* of performance ranking and not necessarily a larger *change* in the performance ranking. Therefore, rather than examining the *change* in the performance ranking, as done in prior research (Jennings et al. 2020), we examine the moderating effects of exclusions on the relation between narcissism and the *level* of the firm's performance ranking.

We report our results using Equation (4) in Table (6). In Column (1), we estimate Equation (4) with industry fixed effects and year-quarter fixed effects. In Column (2), we estimate Equation (4) with firm fixed effects and year-quarter fixed effects. We find a positive and significant coefficient on the interaction between *Narcissism* and *Non-GAAP Exclusions* (1 percent level) in Column (2) with firm fixed effects. The coefficient on the interaction term in Column (1) is positive, but not statistically significant at conventional levels ($p = 0.114$). These results provide some support for the idea that narcissistic CEOs use non-GAAP exclusions to achieve a higher firm performance compared to industry peers (Jennings et al. 2020).

We reestimate this model using the Bentley et al. (2018) data in Columns (3) and (4) of Table 6, for which we note a significant reduction in our sample size. The coefficient on the interaction between *Narcissism* and *Non-GAAP Exclusions* is insignificant in Column (3). Contrary to expectations and inconsistent with Column (2), we find a significantly (10 percent level) negative coefficient on the interaction in Column (4). Overall, these results provide mixed evidence that narcissistic CEOs issue non-GAAP earnings to maintain or improve their perceived status by market participants. Despite these mixed results on the consequences, our prior result that narcissistic CEOs are more likely to issue lower-quality exclusions is still interesting and important because prior research suggests that non-GAAP earnings are consequential (e.g., Doyle et al. 2003; Doyle et al. 2013). In three of the four columns in Table 6, we find a negative and significant coefficient on *Non-GAAP Exclusions*, which suggests that firms that use exclusions have lower performance rankings within the industry.

Meet or Beat Behavior

We further examine the use of positive exclusions to meet or beat analyst behavior by directly examining if narcissistic CEOs are more likely to use non-GAAP exclusions to meet or beat analyst forecasts. We regressed *Meet-or-Beat*, an indicator variable equal to 1 if I/B/E/S Actual EPS is greater than the median consensus analyst forecast from I/B/E/S, on *Narcissism*, *Exclusion*, and *Narcissism * Exclude* while also controlling for *BTM*, *SalesGrowth*, *Size*, *Profitable*, and *ROA*. This test is similar to one used by Doyle et al. (2013), who found a positive association between non-GAAP exclusions and meeting or

TABLE 7
The Effect of CEO Narcissism and Non-GAAP Exclusions on Meet or Beat Behavior

Variable	DV: MBE							
	I/B/E/S Data				Bentley et al. (2018) Data			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
	Coef.	t	Coef.	t	Coef.	t	Coef.	t
<i>Exclude</i>	0.02***	3.25	0.02**	2.38	−0.02	−1.35	−0.03**	−2.03
<i>Narcissism</i>	0.01	1.10	0.00	0.35	0.01	1.15	−0.00	−0.23
<i>Narcissism * Exclude</i> (Expected sign: +)	0.01	1.34	0.01	1.51	0.01	0.80	0.02*	1.70
<i>BTM</i>	−0.01	−0.62	−0.03*	−1.90	0.00	0.05	0.02	0.72
<i>SalesGrowth</i>	0.09***	4.38	0.08***	4.96	0.04*	1.71	0.06*	1.94
<i>SizeEquity</i>	0.02***	5.21	−0.07***	−6.85	0.02***	3.71	−0.04**	−2.04
<i>Profitable</i>	0.22***	9.98	0.19***	11.36	0.15***	4.83	0.12***	3.98
<i>ROA</i>	3.61***	8.12	6.45***	17.98	4.96***	7.41	7.92***	11.75
Firm Fixed Effects	No		Yes		No		Yes	
Industry Fixed Effects	Yes		No		Yes		No	
Year-Quarter Fixed Effects	Yes		Yes		Yes		Yes	
Observations	18,768		18,765		6,326		6,273	
Adjusted. R ²	0.10		0.15		0.11		0.17	

***, **, * Indicate coefficients statistically different from zero at the 1 percent, 5 percent, and 10 percent levels (two-tailed), respectively.

All continuous variables are winsorized at the 1 percent and 99 percent levels. Standard errors are clustered by firm and year-quarter for Columns (1) and (3).

All variables are as defined in Appendix A.

beating analyst expectations. We find a positive, but not statistically significant, coefficient (at conventional levels) on the interaction between *Narcissism* and *Exclude* when using the I/B/E/S data in Columns (1) and (2) of Table 7 ($p = 0.186$ and 0.132 , respectively).²⁷ Consistent with prior research (Doyle et al. 2013), we find a positive and significant coefficient on *Exclude* in Columns (1) and (2).

When using the Bentley et al. (2018) data in Columns (3) and (4) of Table 7, we find an insignificant coefficient on the interaction when industry fixed effects are included (Column (3)), but a positive and significant (10 percent level) coefficient on the interaction when firm fixed effects are included (Column (4)). The results in Column (4) provide some evidence that more narcissistic CEOs issue non-GAAP earnings to help maintain or improve their perceived status by market participants; however, the results do not appear to be consistent across all specifications in Table 7. Inconsistent with prior research (Doyle et al. 2013), we find an insignificant coefficient on *Exclude* in Column (3) and a significantly negative (5 percent level) coefficient on *Exclude* in Column (4).

Constrained Balance Sheets

Barton and Simko (2002) provide evidence that the manager's previous earnings management choices affect the manager's ability to opportunistically bias earnings in future periods. Barton and Simko (2002) measure the aggregate effect of the previous earnings management choices using net operating assets (NOA). Firms with higher (lower) NOA have a lower (higher) ability to manage earnings in the future. Doyle et al. (2013) provide evidence that firms are more likely to exclude expenses from non-GAAP earnings when net operating assets are high and when meeting or beating expectations. They do not find a similar positive relation between NOA and exclusions when firms do not meet or beat expectations.

We extend Doyle et al. (2013) by examining how within-GAAP constraints influence the use of non-GAAP exclusions when meeting or beating expectations using the following equation.

²⁷ Prior research suggests that non-GAAP exclusions are used to aid a firm in meeting or beating analysts' forecasts (Doyle et al. 2013). Meeting analysts' forecasts can be beneficial to managers due to the associated stock price increase (Frankel et al. 2011). Olsen et al. (2014) provide evidence that narcissistic CEOs are more likely to meet or beat analysts' forecasts. In order to rule out a mechanical relationship, we break up *Exclusions* into positive and negative exclusions (Doyle et al. 2013). We find that when positive exclusions are interacted with narcissism, they increase the probability of exclusions use, but that the negative exclusion interaction term is insignificant.

$$Exclude_{i,q} = \beta_0 + \beta_1 NOA_{i,q} + \beta_2 Narcissism_{i,q} + \beta_3 NOA_{i,q} * Narcissism_{i,q} + Controls_{i,q} + \varepsilon_{i,q} \quad (5)$$

Following [Doyle et al. \(2013\)](#), we estimate Equation (5) separately based on whether the firm meets or beats analyst forecasts. If constrained in using within-GAAP earnings management to meet or beat expectations, we expect that narcissistic CEOs are incrementally more likely to use non-GAAP exclusions when meeting or beating expectations. Support for this would be evident by a positive coefficient on the *NOA * Narcissism* interaction term when the firm meets or beats analyst expectations. As seen in Panel A of Table 8, we find a positive and statistically significant coefficient on the interaction term (5 percent level) in Column (3) when the firm meets or beats analyst forecasts. We find an insignificant coefficient on the interaction in Column (1) when the firm does not meet or beat expectations. We also find that the coefficients on the interaction terms in Columns (1) and (3) are statistically different (5 percent level). Consistent with the results in [Doyle et al. \(2013\)](#), we find a positive and significant (5 percent level) coefficient on *NOA* when firms meet or beat expectations and an insignificant coefficient on *NOA* when firms do not. For completeness, we also provide the results including firm fixed effects in Columns (2) and (4) and note that our inferences from the interaction between *NOA * Narcissism* remained unchanged.

We also estimate these tests using the [Bentley et al. \(2018\)](#) data to define exclusions in Panel B of Table 8. The results are not statistically significant and the sample size is significantly smaller. Overall, we provide some evidence that narcissistic CEOs are more likely to use positive exclusions to meet or beat expectations when facing within-GAAP constraints.

Disaggregated Non-GAAP Exclusions

We disaggregate *Exclusions* into two types—*Special Items* and *Other Exclusions*. We define exclusions, special items, and other exclusions similarly to [Doyle et al. \(2013\)](#). *Exclusions* is equal to non-GAAP earnings less GAAP earnings. Total exclusions are comprised of special items and other exclusions. *Special Items* are equal to operating income less GAAP earnings. Other exclusions exist if special items are not equal to total exclusions. Therefore, we define other exclusions as total exclusions less special items. *Special Items (Other Exclusions)* is equal to the value of special items (other exclusions). *Special Items Exclude (Other Exclusions Exclude)* is equal to 1 if special items (other exclusions) are greater than zero.

[Doyle et al. \(2003\)](#) and [Doyle et al. \(2013\)](#) suggest that other exclusions tend to be more opportunistic than special items. However, [McVay \(2006\)](#) provides evidence of “managers opportunistically shifting expenses from core expenses to special items.” Therefore, it is not completely clear that only other exclusions are used by managers to opportunistically affect earnings. These disaggregated measures of non-GAAP exclusions can potentially provide additional insight into the nature of the exclusions made by firms with narcissistic CEOs.

We replace *Exclude* in Equation (1) with *Special Items Exclude* or *Other Exclusions Exclude*. We find (untabulated) that CEO narcissism is positively associated with *Special Items Exclude* (5 percent level), but not with *Other Exclusions Exclude*. In Equation (2), we replace *Non-GAAP Exclusions* with *Special Items* and *Other Exclusions*. We find (untabulated) that CEO narcissism is positively associated with *Special Items* (10 percent level) and *Other Exclusions* (5 percent level). Our results suggest that CEO narcissism affects the likelihood and magnitude of non-GAAP exclusions in the form of special items and other exclusions.²⁸

Alternative Narcissism Measures

Picture Size

CEO pay, which is a component of our narcissism measure, is likely related to factors associated with disclosure and performance incentives, which could introduce correlated omitted variable and reverse causality concerns. [Guest et al. \(2018\)](#) is a contemporaneous work that suggests that CEOs are paid excessively more when they report a larger gap between non-GAAP and GAAP earnings. There are several reasons to believe that our results are not driven by correlated omitted variables or subject to reverse causality. First, from a theoretical standpoint, because narcissistic CEOs are more likely to believe that they are superior, entitled, the center of attention, and self-sufficient, we expect that CEOs' *relative* pay is a more appropriate proxy than *total* overall compensation. Our narcissism measure uses both the CEO's *relative* cash and *relative* non-cash pay to other managers in the same firm, while the [Guest et al. \(2018\)](#) paper uses *total* compensation, which includes cash, bonus, stock awards, and option awards. Second, we measure narcissism in years 2 and 3 of the CEO's tenure, and then estimate our tests in year 4 and onward. We believe this design choice reduces the likelihood that the issuance of non-GAAP earnings is leading to boards approving higher pay. In our empirical design, we measure the CEO's relative compensation before the issuance of non-GAAP earnings, which reduces the likelihood that reverse causality is a significant concern.

²⁸ This test decomposes *Total Exclusions* into *Other Exclusions* and *Special Items* and assumes that all special items are excluded from I/B/E/S by construction. At some level, the interpretation of the coefficient on *Special Items* can be interpreted as a test of whether special items exist.

TABLE 8
The Effect of CEO Narcissism and NOA on Non-GAAP Exclusion

Panel A: I/B/E/S Data

Variable	DV: Exclude							
	I/B/E/S Data							
	(1) MBE = 0		(2) MBE = 0		(3) MBE = 1		(4) MBE = 1	
	Coef.	t	Coef.	t	Coef.	t	Coef.	t
NOA	0.00	1.41	0.00**	2.08	0.00***	2.31	0.01***	1.94
Narcissism	0.03**	2.02	0.01	0.63	0.01	0.95	0.03***	1.84
NOA * Narcissism (Expected sign for MBE = 1: +)	-0.00	-1.22	-0.00	-1.65	0.00**	2.14	0.00*	1.77
BTM	0.10**	3.95	0.04	0.99	0.12**	4.08	0.10***	2.92
SalesGrowth	-0.12***	-3.34	-0.16***	-4.55	-0.14***	-4.20	-0.17***	-5.50
SizeEquity	0.03	3.23	0.00	-0.24	0.02*	1.85	-0.03**	-1.22
Profitable	0.08***	2.58	-0.02	-0.83	0.08**	2.16	0.01	-0.80
ROA	0.30	0.32	4.74***	5.69	1.52*	1.83	5.95***	6.52
Firm Fixed Effects	No		Yes		No		Yes	
Industry Fixed Effects	Yes		No		Yes		No	
Year-Quarter Fixed Effects	Yes		Yes		Yes		Yes	
Observations	4,953		4,910		13,813		13,808	
Adjusted R ²	0.08		0.24		0.07		0.27	

***, **, * Indicate coefficients statistically different from zero at the 1 percent, 5 percent, and 10 percent levels (two-tailed), respectively.

All continuous variables are winsorized at the 1 percent and 99 percent levels. Standard errors are clustered by firm and year-quarter for Columns (1) and (3).

All variables are as defined in Appendix A.

Panel B: Bentley et al. (2018) Data

Variable	DV: Exclude							
	Bentley et al. (2018) Data							
	(6) MBE = 0		(7) MBE = 0		(8) MBE = 1		(9) MBE = 1	
	Coef.	t	Coef.	t	Coef.	t	Coef.	t
NOA	0.00**	2.06	-0.00	-0.26	0.00	1.23	0.00	0.43
Narcissism	0.03	1.44	-0.00	-0.09	0.02	0.89	0.07***	3.48
NOA * Narcissism (Expected sign for MBE = 1: +)	-0.00	-1.29	-0.00	-0.99	-0.00	-0.15	-0.00	-0.97
BTM	0.03	0.62	0.10	1.44	-0.00	-0.11	-0.05	-1.09
SalesGrowth	0.01	0.10	-0.13**	-2.28	0.00	0.05	-0.11***	-3.16
SizeEquity	0.04***	3.05	0.05	0.98	0.02**	2.05	0.02	0.70
Profitable	-0.01	-0.19	-0.05	-0.86	0.08	1.52	0.05	1.09
ROA	0.53	0.43	1.16	0.66	-1.66**	-1.59	0.57**	-0.86
Firm Fixed Effects	No		Yes		No		Yes	
Industry Fixed Effects	Yes		No		Yes		No	
Year-Quarter Fixed Effects	Yes		Yes		Yes		Yes	
Observations	1,642		1,516		4,681		4,603	
Adjusted R ²	0.17		0.36		0.14		0.34	

***, **, * Indicate coefficients statistically different from zero at the 1 percent, 5 percent, and 10 percent levels (two-tailed), respectively.

All continuous variables are winsorized at the 1 percent and 99 percent levels. Standard errors are clustered by firm and year-quarter for Columns (1) and (3).

All variables are as defined in Appendix A.

Based on the explanations above, we believe that the effect of the difference between non-GAAP and GAAP earnings on total CEO compensation is not a significant concern. Nevertheless, it is possible that relative compensation is related to other disclosure and performance incentives. Therefore, we reestimate Tables 3 through 8 (untabulated) using only the CEO photo size component to measure narcissism and generally find qualitatively similar results.^{29,30}

Signature Size

Ham et al. (2017) and Ham, Seybert, and Wang (2018) use CEO signature size to measure narcissism. While this measure has value and is useful in the literature, we believe there are several advantages to using our composite narcissism measure. First, prior research provides support that our composite measure, which closely mirrors that of the prior literature, captures the construct of narcissism (e.g., Chatterjee and Hambrick 2007; Patel and Cooper 2014; Zhu and Chen 2015a). Second, our narcissism measure is a composite of multiple measures, which could help to better capture a multi-faceted trait such as narcissism. Chatterjee and Hambrick (2007) outline how the components of the composite narcissism measure map to different conceptual elements of narcissism. Ham et al. (2018) find that signature size is correlated with two of the seven subscales of the narcissistic personality inventory (NPI), namely, authoritativeness and exploitativeness. While similar correlations between the NPI subscales and our measure are not available, we argue, similar to Chatterjee and Hambrick (2007), that these measures capture a broad set of conceptual elements of narcissism. However, we do not empirically test our assertion that our narcissism measure captures different elements of narcissism than CEO signature size. We leave the empirical examination of how the Chatterjee and Hambrick (2007) measure correlates empirically with the NPI subscales to future research. Third, there is an extensive literature in both accounting and management that uses a similar measure of CEO narcissism to the measure we use (Cragun et al. 2020).

Ultimately, we acknowledge, as with any proxy for a difficult-to-measure construct, that our findings are a joint test of the hypotheses and narcissism proxies, each of which have unique limitations and measurement error (including the proxy we primarily use). For the sake of comparison and transparency, we report the results using various measures of narcissism in Panels A and B of Table 9 for H1 and H2. Column (1) reproduces the results from Tables 3 and 4 using the narcissism index. Columns (2), (3), and (4) include the results using only photo size, relative cash pay, and relative non-cash pay as individual narcissism proxies. Column (5) includes the results using only the CEO's signature size as the narcissism proxy. We note that using the CEO signature size measure, none of our hypotheses are supported. It behooves future research to further explore these measures and better understand their uses and limitations.

VI. CONCLUSION

Our study provides evidence on how CEO narcissism can influence how managers define non-GAAP earnings. The non-GAAP earnings setting provides a powerful test of narcissistic behavior by executives. Managers have flexibility and discretion on what GAAP expenses are excluded from non-GAAP earnings. This discretion in the non-GAAP earnings setting, along with the ability to influence others' opinions, lends itself to possible managerial opportunism. Our results show that narcissistic CEOs, in particular, are more prone to exclude income-decreasing items from non-GAAP earnings to shape how their company is viewed. Narcissistic CEOs have an unrelenting need for self-enhancement, and the non-GAAP earnings settings affords them such an opportunity. Our results also suggest that more narcissistic CEOs are more likely to exclude a higher magnitude of income-decreasing items from non-GAAP earnings. Furthermore, our results suggest that the exclusions from non-GAAP earnings made by more narcissistic CEOs are more persistent, which suggests that they are lower-quality. Regulators and investors are concerned with managers using non-GAAP exclusions opportunistically. Our findings aid investors and regulators in identifying which firms have a higher likelihood of using non-GAAP exclusions to improve the appearance of their firms' performance. Our findings demonstrate the meaningful effect that individual executives can have on firms' strategic and accounting-related outcomes and choices.

We recognize that our empirical model and design limit our ability to make causal inferences. Despite being validated and used by prior research, we recognize limitations in our CEO narcissism measure, which include lacking the richness that a self-reported measure such as the Narcissistic Personality Inventory provides (Raskin and Terry 1988). Our sample of relatively large, publicly listed firms also limits our inferences to similar firms. The behavior of managers employed at smaller or privately held firms is beyond the scope of this study.

²⁹ We find that for the firms with multiple CEOs, the correlation between the photo size measures of the CEOs at the same firm is 0.28. This suggests that photo size changes with CEO changes and is not simply a firm fixed effect.

³⁰ There are four situations in which the results get weaker: (1) the coefficient on *Narcissism* in Column (1) of Table 4 is no longer significant ($p = 0.11$); (2) the coefficient on the interaction between *Non-GAAP Exclusion* and *Narcissism* is no longer significant in Columns (2) or (4) of Panel A in Table 5; (3) the coefficient on the interaction between *Non-GAAP Exclusion* and *Narcissism* is no longer significant in Columns (2) and (4) of Panel B in Table 5; and (4) the coefficient on the interaction between *Narcissism* and *Non-GAAP Exclusion* is no longer significant in Table 7.

TABLE 9
Measurement Robustness Checks

Panel A: Replicating Table 3 with Various Narcissism Measures

		DV: Exclude									
		Narcissism Measure									
		Narcissism Index			Photo Size		Relative Cash Pay		Non-Cash Pay		Signature Size
		Bentley et al. (2018)		I/B/E/S	Bentley et al. (2018)		I/B/E/S	Bentley et al. (2018)	I/B/E/S	Bentley et al. (2018)	Bentley et al. (2018)
		Coef.	(2)		Coef.	(4)	Coef.	(5)	Coef.	(6)	
		Bentley et al. (2018)		I/B/E/S	Bentley et al. (2018)		I/B/E/S	Bentley et al. (2018)	I/B/E/S	Bentley et al. (2018)	Bentley et al. (2018)
		Coef.	(1)		Coef.	(3)	Coef.	(4)	Coef.	(7)	
Narcissism (H1: +)		0.02**	0.01	0.02**	0.02	0.02**	0.02*	0.02**	0.00	-0.01	0.01
BTM		0.13***	0.00	0.12***	0.00	0.13***	0.01	0.13***	0.13***	0.00	0.10
SalesGrowth		-0.13***	0.02	-0.13***	0.02	-0.13***	0.02	-0.13***	-0.13***	0.02	-0.07
SizeEquity		0.02***	0.03***	0.02***	0.03***	0.02***	0.03***	0.02***	0.02***	0.03***	0.03
Profitable		0.08***	0.05	0.08***	0.05	0.08***	0.05	0.09***	0.09***	0.05	0.09
ROA		1.26*	-1.49	1.21*	-1.57	1.19	-1.52	1.10	1.10	-1.78*	-1.39
Firm Fixed Effects	No	No	No	No	No	No	No	No	No	No	No
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	19,092	6,353	19,092	19,092	6,353	19,092	6,353	19,092	4,970	6,353	1,416
Adjusted R ²	0.07	0.14	0.07	0.07	0.14	0.07	0.14	0.07	0.10	0.14	0.17

***, **, * Indicate coefficients statistically different from zero at the 1 percent, 5 percent, and 10 percent levels (two-tailed), respectively. All continuous variables are winsorized at the 1 percent and 99 percent levels. Standard errors are clustered by firm and year-quarter. All variables are as defined in Appendix A.

(continued on next page)

TABLE 9 (continued)

Panel B: Replicating Table 4 with Various Narcissism Measures

DV: Non-GAAP Exclusions

	Narcissism Measure									
	Narcissism Index		Photo Size		Relative Cash Pay		Non-Cash Pay		Signature Size	
	I/B/E/S (1) Coef.	Bentley et al. (2018) (2) Coef.	I/B/E/S (3) Coef.	Bentley et al. (2018) (4) Coef.	I/B/E/S (5) Coef.	Bentley et al. (2018) (6) Coef.	I/B/E/S (7) Coef.	Bentley et al. (2018) (8) Coef.	I/B/E/S (9) Coef.	Bentley et al. (2018) (10) Coef.
Narcissism (H2: +)	0.01**	0.01**	0.02	0.01*	0.01**	0.00	0.00	0.01	-0.00	0.00
BTM	0.09***	0.10***	0.09***	0.10**	0.09***	0.10***	0.09***	0.10**	0.10**	0.14
SalesGrowth	-0.14***	-0.15***	-0.14***	-0.15**	-0.14***	-0.15**	-0.14***	-0.15**	-0.17***	-0.26*
SizeEquity	0.00	0.03***	0.00	0.03***	0.00	0.03***	0.00	0.03***	-0.02*	0.02
Profitable	-0.01	-0.12***	-0.01	-0.12***	-0.01	-0.12***	-0.01	-0.12***	-0.02	-0.32**
ROA	2.28***	-0.94*	2.23***	-1.04*	2.24***	-1.08*	2.24***	-1.03*	3.62***	0.96
Firm Fixed Effects	No	No	No	No	No	No	No	No	No	No
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	19,092	6,353	19,092	6,353	19,092	6,353	19,092	6,353	4,970	1,416
Adjusted R ²	0.05	0.10	0.04	0.08	0.05	0.08	0.04	0.08	0.07	0.14

***, **, * Indicate coefficients statistically different from zero at the 1 percent, 5 percent, and 10 percent levels (two-tailed), respectively. All continuous variables are winsorized at the 1 percent and 99 percent levels. Standard errors are clustered by firm and year-quarter. All variables are as defined in Appendix A.

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APPENDIX A

Variable Definitions

Variable Name	Definition
<i>Non-GAAP Exclusions</i>	Equal to I/B/E/S Actual EPS minus GAAP EPS. GAAP EPS is earnings per share before extraordinary items and discontinued operations. (Compustat data item epspxq) or diluted (data item epsfxq) EPS per the I/B/E/S basic/diluted flag.
<i>Exclude</i>	Indicator variable equal to 1 if I/B/E/S Actual EPS exceeds GAAP EPS, and 0 otherwise.
<i>Narcissism</i>	A composite measure based on relative cash compensation, relative noncash compensation, and the size and prominence of the CEO's photo in the firm's annual report.
<i>BTM</i>	Book-to-market is measured as the book value of equity (Compustat data item seqq) divided by the market value of equity at the end of the fiscal quarter (Compustat data item cshoq multiplied by Compustat data item prccq).
<i>SalesGrowth</i>	The quarterly change in revenue over the same quarter in the prior year (Compustat data item saleq).
<i>SizeEquity</i>	Log of market value of equity at quarter-end (Compustat data item cshoq multiplied by data item prccq).
<i>SizeAssets</i>	Log of total assets (Compustat data item atq).
<i>Profitable</i>	An indicator variable equaling 1 if I/B/E/S Actual EPS is positive, and 0 otherwise.
<i>ROA</i>	Return on assets, measured as I/B/E/S Actual EPS scaled by total assets per share (Compustat data item atq divided by Compustat item cshoq).
<i>Loss</i>	Indicator variable equal to 1 if quarterly GAAP earnings is less than zero, and 0 otherwise.
<i>Volatility</i>	The standard deviation of ROA over the preceding eight quarters.
<i>Future GAAP Earnings</i>	Earnings per share before extraordinary items (Compustat data item epsfxq) summed over quarters $q+1$ through $q+4$.
<i>Future Operating Income</i>	Earnings per share from operations (Compustat data item opepsq) on a diluted basis summed over quarters $q+1$ through $q+4$; an implied dilution factor is used, which is calculated as the most recent annual basic shares outstanding (Compustat data item eshpri) divided by annual diluted shares outstanding (Compustat data item cshfd).
<i>Non-GAAP Earnings</i>	Non-GAAP earnings is the non-GAAP earnings number disclosed in the earnings announcement (I/B/E/S item VALUE).
<i>Special Items</i>	Operating income per share (Compustat item opepsq) – GAAP EPS before extraordinary items (Compustat item epspxq or epsfxq).
<i>Other Exclusions</i>	Non-GAAP exclusions – SPECITEMS.
<i>Other Exclusions Exclude</i>	Indicator variable equal to 1 if OTHEREXCL is greater than zero, and 0 otherwise.
<i>Special Items Exclude</i>	Indicator variable equal to 1 if SPECITEMS is greater than zero, and 0 otherwise.
<i>MBE</i>	Indicator variable that takes the value of 1 if SURPRISE is greater than or equal to zero, and 0 otherwise. SURPRISE is a continuous variable that is equal to I/B/E/S Actual EPS figure minus the median consensus analyst forecast from I/B/E/S.
<i>NOA</i>	Similar to Barton and Simko (2002) , we calculate net operating assets as stockholders' equity less cash, less short-term investments, and plus total debt. We also scale net operating assets by sales.
<i>Firm Ranking</i>	Firm ranking is equal to firm i 's performance ranking (in a descending order, i.e., higher value if ranking is high) within six-digit GICS industry divided by the number of firms in the same industry. Firm performance is equal to ROE. ROE is equal to firm i 's I/B/E/S-reported Actual EPS in quarter t multiplied by the weighted-average number of shares outstanding divided by the book value of equity at the beginning of quarter t .